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ABSTRACT

A Pennsylvania project to improve the reading skills of commercial drivers and to help them pass the required federal Commercial Driver's License (CDL) written examination was evaluated at five pilot sites. The project used ROAD (Real Opportunities for Advancement and Development) to Success, a basic skills course of interactive computer courseware and print instructional materials developed for truck drivers in the Pennsylvania Department of Transportation (PennDOT). Participants were 68 of 77 workers who failed a sample CDL test--the Quick Assessment Test (QAT)--and who scored below the advanced level on the vocabulary section (approximately 9th grade level) of the Tests of Adult Basic Education (TABE) Locator Form; 58 completed the 100-hour course. Personal interviews were conducted. A criterion-referenced test, TABE survey forms, QAT, and CDL examination were administered to participants and a comparison group of 10 PennDOT workers. Scores on all tests increased significantly for the treatment group. At the end of the project, 59 percent of ROAD workers passed the CDL compared with 37 percent of the comparison group. Recommendations were for program dissemination, supplemental help for low-level readers, teachers with workplace literacy experience and computer skills, and open entry/open exit. (YLB)

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Workplace Literacy Instruction and Evaluation: R.O.A.D. TO SUCCESS

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Workplace Literacy Instruction and Evaluation: R.O.A.D. TO SUCCESS

Commercial drivers in the United States are required to pass a federal Commercial Driver's License (CDL) written exam by April 1, 1992. The CDL study manual, on which the test is based, is written at a 6th to 8th grade reading level. This report summarizes the evaluation of a pilot effort to improve reading skills of commercial drivers who are deficient in reading (Brown, 1990). The project's goal was to help commercial drivers pass the required federal written examination while improving their literacy skills.

R.O.A.D. to Success Program

R.O.A.D. (Real Opportunities for Advancement and Development) to Success is a basic skills course of interactive computer courseware and print instructional materials developed for the purpose of assisting truck drivers in the Pennsylvania Department of Transportation (PennDOT) to develop reading skills necessary to pass the test. The curriculum materials demonstrate three characteristics of functional literacy instruction which recent research has demonstrated to be most effective in workforce education programs (Rockefeller Foundation, 1990; Sticht, 1987): integration of basic skills instruction with technical training; using technical content and reading tasks that are used on the job; and highlighting the learner's role as worker or employee during instruction. The core curriculum is divided into two parts: a computer model and a classroom model. A teacher's manual accompanies each.

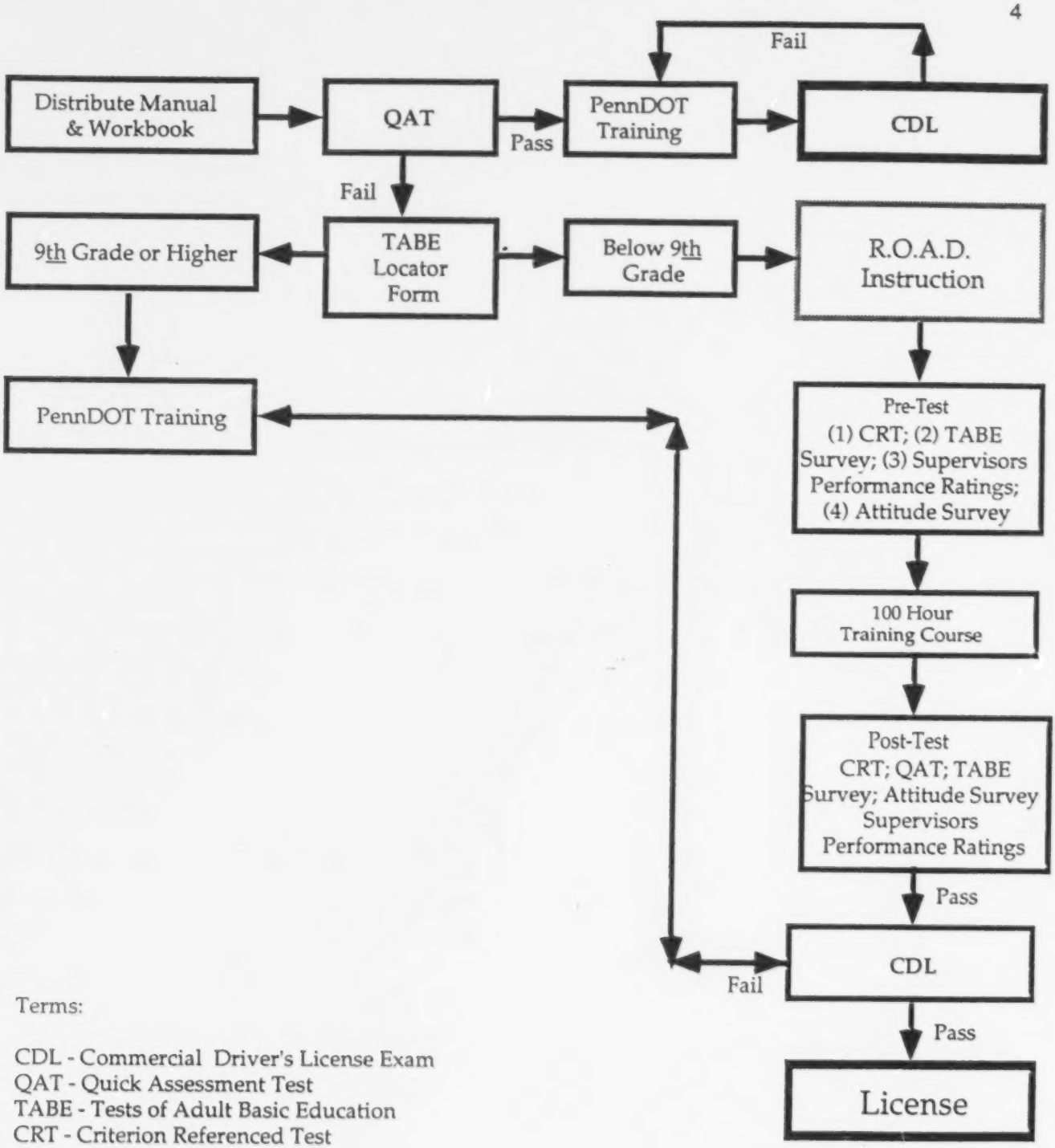
The program, funded by a U. S. Department of Education Workplace Literacy grant, was developed through a partnership of the Pennsylvania Department of Education (PDE); American Federation of State, County, and Municipal Employees (AFSCME); and Penn State's Institute for the Study of Adult Literacy. The Pennsylvania Department of Transportation (PennDOT) was the recipient of services.

Planning and policy decisions were made by the partners. Courseware and print-based materials were developed at the Institute for the Study of Adult Literacy and tested at five sites throughout the state, including rural and urban areas. PDE served as fiscal agent and coordinated the delivery of services. The evaluation of course materials covered the general knowledge section of the CDL manual.

Implementation of the program

The instructional flowchart was developed by the partners in cooperation with PennDOT (see Figure 1). The CDL manual and a workbook prepared by PennDOT were distributed to 476 PennDOT truck drivers in the four target counties. After a short interval of time, a quick assessment test (QAT), which was a sample of the CDL test, was administered to 397 of them. About 36% failed to achieve 80% of the answers correct which is the passing grade for the actual CDL test. Of the 142 who failed the QAT, 120 were given the Tests of Adult Basic Education (TABE) Locator Form. Those who scored below the advanced level on the vocabulary section, approximately 9th grade, were referred to the R.O.A.D. program. Of the 120, 77 had scored below the advanced level; of that 77, 68 enrolled in the *R.O.A.D.to Success* program. Of the 68 workers, 50 were white, 14 black, and 4 Spanish American; two were female. They had an average age of 41, with a range of 22 to 62. They had competed an average of 11 grades of schooling. As measured by the TABE Survey Form, the average reading level was 3.0 with a range of 1.1 grade level to 6.3 grade level.

Of the 68, 58 completed the 100 hour course. Classes were held on Friday mornings for four hours from June, 1989, until the end of January, 1990. The curriculum included both print-based materials and computer courseware. Sixty-two computers were loaned by IBM corporation. Two teachers and one counselor were usually at each site. All of them had experience in teaching adults.



Terms:

CDL - Commercial Driver's License Exam
QAT - Quick Assessment Test
TABE - Tests of Adult Basic Education
CRT - Criterion Referenced Test

Figure 1

R.O.A.D. to Success Instructional Flowchart

Evaluation Design

The partners provided advice on the development of the evaluation plans and monitored the implementation process. They also helped in collecting data at various stages. The evaluation focused on the objectives of the project which related to developing the curriculum materials and implementing them in four counties at five sites. The evaluation was both formative and summative. All partners and PennDOT were involved in the formative evaluation. Data were continuously gathered to help make decisions about developing and carrying out implementation. Feedback was used in modifying both the process and the products.

The major thrust of the evaluation was on measuring the changes among the workers in gaining basic educational skills, but attention was also given to the curriculum materials and the process by which they were developed and used. Both qualitative and quantitative data were collected before and after the project to measure changes which could be attributed to the program.

Personal interviews were conducted by the external evaluator with the partners, the recipient of services, teachers, student workers, county managers, and the curriculum development staff. Tests were administered to the workers before and after the program to measure increase in reading skills and knowledge about content in the manual. Increase in basic educational skills was measured in two ways: 1) by a Criterion Referenced Test (CRT), which measured growth in specific reading skills using content from the CDL study manual; and 2) by the TABE Survey Forms. Increase in knowledge from the CDL manual was measured by the Quick Assessment Test (QAT). Workers also took the CDL exam at the end of the classes. A comparison group of ten PennDOT workers in another county was administered the pre- and post-tests for QAT and CRT. They also took the CDL test.

Findings

Curriculum Materials

Teaching by computers was a key factor in the program. Workers gained satisfaction from using computers; computers motivated the workers to perform the class assignments and to remain in the program. Teachers were reported to be a vital and necessary component of the R.O.A.D. program. Workers were enthusiastic about the support and assistance provided by the teachers. The print-based materials were valuable because they provided structure for the lessons, and they were useful for class teaching and discussion, review, and homework.

Development of the curriculum materials required a longer time than originally planned. Teaching at the sites occurred concurrently with development of the courseware and print-based materials. At times, the course materials were not available when the teachers were ready for them. Hence, teachers expressed some anxiety and frustration because they had limited time to cover the material included in the CDL manual, and many of the workers wanted to advance to new lessons. A similar problem could occur in any workplace literacy program where field testing of the materials occurs concurrently with their development. Since this was a developmental project, teachers and partners felt there should have been more staff development opportunities. Teachers did, however, demonstrate a high level of ability to adapt their teaching to the curriculum materials available to them.

Changes in workers

Scores on all tests increased significantly for the treatment group (see Table 1). When compared with the comparison group, the changes were not significant for the Criterion Referenced Test (CRT) but they were for the Quick Assessment Test (QAT) (see Table 2). Scores on the TABE Survey Form also increased significantly for the treatment group; reading levels of workers increased 3.3. grades from 3.0 to 6.3.

Table 1

Mean Changes for R.O.A.D. Workers on CRT, QAT, TABE, and Reading Levels(1)

	N	Pre	Post	Change	T Value	
CRT	45	70.9	79.8	+8.9	6.1	*
QAT	45	33.4	49.7	+16.3	13.6	*
TABE	44	643.2	700.6	+57.4	5.6	*
Reading Level	44	3.0	6.3	+3.3	6.8	*

*Significant at .001 level

(1)CRT had 95 items and QAT 73; scores are number of items correct

Table 2

T Tests for Changes Between R.O.A.D. Workers and Comparison Group on CRT and QAT

	N	Change	SD	df	T Value	
CRT						
R.O.A.D.	45	+8.9	9.8	52	.21	n.s.
Comparison	9	+8.1	15.3			
QAT						
R.O.A.D.	45	+16.3	8.1	53	3.9	*
Comparison	10	+5.5	6.8			

*Significant at .001 level

Fifty-nine percent of the R.O.A.D. workers compared with 37% of the comparison group passed the Commercial Driver's License exam at the end of the program, a significant difference. There were no significant correlations between age and educational levels and the CDL scores.

Teachers observed that all workers increased their reading skills. Job performance of the workers, rated before and after the program on a 5-point scale, increased significantly as judged by the county managers. Workers also increased their work skills and basic functional skills in their family and community. Several workers gave examples of job improvement and new reading experiences as a result of the program. All participants were positive about the program and felt that it should be offered to other workers who are required to take the CDL exam.

The workers were given an attitude survey before and after the program. They were asked on a five point scale how they felt about various factors related to the program. For most questions there were no significant changes. For all questions the attitudes shifted towards the intended objectives of the program. Positive changes were significant for attitudes about being a student and gaining support from family members for participating in the program. They became more positive about the R.O.A.D. program and being able to pass the CDL exam. Attitudes about using computers became more positive also. Benefits included passing the exam, learning to read better, and keeping their job.

Recommendations

The following recommendations were derived from the evaluation study:

- All participants recommended that the program be disseminated to other potential users.
- Low level readers should receive supplemental help (e.g., tutors, additional materials) with reading in a job-related context to receive maximum benefit.
- Use of computers was strongly recommended.

- Print materials should serve as supplementary review and discussion materials.
- Teachers with workplace literacy experience should be selected.
- Teachers also need skills in working with computers.
- Open entry and open exit from the program should be permitted.

A Final Note

The partnership, based on the success in the pilot sites, reapplied for funding in the second round of competition for the Workplace Literacy Grants; they were awarded another grant to complete the curriculum, develop a workbook and tutor's manual for those functioning at a beginning reading level, offer training workshops to other states, and deliver services on a statewide basis. Currently R.O.A.D. to Success is being offered throughout the state, divided into six regions, using computers purchased by PDE. A teacher and paraprofessional are assigned to each region with multiple sites established within the regions. PennDOT moves the computers in its vans every two months within each region to provide statewide coverage. Since currently about 95 percent of PennDOT's workforce has passed the CDL exam, most of the learners in the current project are school bus drivers, workers from other state agencies and municipalities, and private industry employees. Similar evaluation procedures are underway in the current project and will be available at the conclusion after September 30, 1991.

While partnership efforts are never easy, joint efforts do result in service delivery that is far superior to what any one organization could do alone. Union participation is deemed as essential to recruitment and morale among the learners. This model makes great sense in upgrading the literacy skills of a workforce that had been away from school and literacy activities for many years. Embedding literacy instruction in job-related instruction results in better retention of literacy skills because the content is relevant to the learners; instruction can build upon already existing background

knowledge which is important in reading comprehension. Computers are essential in workforce education programs because they offer a face-saving way to learn literacy skills as well as prepare for the modern workplace.

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